In the Claims

1. (Original) A method, comprising:

introducing an exogenous fluorescent contrast agent into a biologic tissue, the tissue multiply scattering light with a mean time-of-flight, and the agent having a fluorescence lifetime within a factor of about ten of the mean time-of- flight;

exposing the tissue to an excitation light with a predetermined time-varying intensity;

detecting a light emission from the tissue in response to said exposing;

generating an image of the tissue by mapping spatial variation of a level of a fluorescence characteristic of the tissue from the light emission in accordance with a mathematical expression modeling multiple light scattering behavior of the tissue; and

wherein the agent is selected in accordance with a predetermined relationship between degree of image contrast and at least one of fluorescence yield or the fluorescence lifetime.

2. (Original) The method of claim 1, wherein the at least one is fluorescence lifetime.

3. (Original) The method of claim 1, wherein the fluorescence lifetime is in a range of about 0.1 to 10 nanoseconds.

4. (Original) The method of claim 1, wherein the fluorescence lifetime is in a range of about 0.5 to 5 nanoseconds.

5. (Original) The method of claim 1, wherein the fluorescence lifetime is in a range of about 0.2 to 2 nanoseconds.

6. (Original) The method of claim 1, wherein the mathematical expression corresponds to a diffusion equation approximation of multiply scattered light.

7. (Original) The method of claim 1, wherein the fluorescence characteristic is at least one of fluorescence lifetime, fluorescence yield, or fluorescence quantum efficiency.

8. (Original) The method of claim **1,** wherein said generating includes determining a modulation amplitude change and a phase change of the light emission relative to the excitation light.

9. (Original) The method of claim 8, wherein the fluorescence characteristic corresponds to the fluorescence lifetime.

10. (Original) The method of claim 9, wherein the mathematical expression is in a frequency domain form and the image contrast is provided in terms of at least one of phase shift contrast or modulation contrast.

11. (Original) A method comprising:

selecting a fluorescent contrast agent as a function of a predetermined time-of-flight for a tissue to be imaged in accordance with a mathematical expression modeling the behavior of multiply scattered light traveling through the tissue, the fluorescent contrast agent have a fluorescence lifetime within a factor of ten of the predetermined time-of-flight; and

providing the fluorescent agent for introduction into the tissue.

12. (Original) The method of claim 11, wherein the fluorescence lifetime is in a range of about 0.1 to 10 nanoseconds.

13. (Original) The method of claim 11, wherein the fluorescence lifetime is in a range of about 0.5 to 5 nanoseconds.

14. (Original) The method of claim 11, wherein the fluorescence lifetime is in a range of about 0.2 to 2 nanoseconds.

15. (Original) The method of claim 11, wherein the mathematical expression corresponds to a diffusion equation approximation of multiply scattered light.

16. (Original) The method of claim 11, further comprising generating an image of the tissue by mapping spatial variation of a level of a fluorescence characteristic of the tissue.

17. (Original) A method, comprising:

evaluating ability of a number of fluorescent agents to provide image contrast between different tissue types, said evaluating including determining a relationship between degree of image contrast and at least one of fluorescence lifetime or fluorescence yield of the agent;

selecting one of the agents based on said evaluating; and

providing the selected one of the agents for introduction into a biologic tissue to enhance imaging performed in accordance with a mathematical expression modeling the behavior of multiply scattered light traveling through the tissue.

18. (Original) The method of claim 17, wherein the at least one is fluorescence lifetime.

19. (Original) The method of claim 17, wherein the mathematical expression corresponds to a diffusion equation approximation of multiply scattered light.

20. (Original) The method of claim 19, further comprising applying the diffusion equation approximation in a frequency domain form.

21. (Original) The method of claim 17, further comprising generating an image of the tissue by mapping spatial variation of a level of a fluorescence characteristic of the tissue.

22. (Original) The method of claim 17, wherein the mathematical expression is in a frequency domain form and the image contrast is provided in terms of at least one of phase shift contrast or modulation contrast.

23. (Original) A method, comprising:

exposing a biologic tissue to a first excitation light;

detecting a first emission from the tissue in response to the first excitation light;

introducing a fluorescent contrast agent into the tissue after said detecting;

exposing the tissue after said introducing to a second excitation light;

sensing a second emission in response to the second excitation light;

comparing data corresponding to the first emission with data corresponding to the second emission to evaluate contrast provided by the agent as a function of at least one of fluorescence lifetime, fluorescence yield, or quantum efficiency.

24. (Original) The method of claim 23, wherein the at least one is fluorescence lifetime.

25. (Original) The method of claim 24, wherein the fluorescence lifetime is in a range of about 0.1 to 10 nanoseconds.

26. (Original) The method of claim 24, wherein the fluorescence lifetime is in a range of about 0.5 to 5 nanoseconds.

27. (Original) The method of claim 24, wherein the fluorescence lifetime is in a range of about 0.2 to 2 nanoseconds.

28. (Original) The method of claim 23, further comprising evaluating the first and second emissions with a mathematical expression modeling the behavior of multiply scattered light traveling through the tissue.

29. (Original) The method of claim 28, wherein the mathematical expression corresponds to a diffusion equation approximation of multiply scattered light.

30. (Original) The method of claim 23, further comprising generating an image of the tissue by mapping spatial variation of a level of a fluorescence characteristic of the tissue.

31. (Original) The method of claim 30, wherein the fluorescence characteristic is at least one of fluorescence lifetime, fluorescence yield, or fluorescence quantum efficiency.

32. (Original) The method of claim 30, wherein said generating includes determining a modulation amplitude change and a phase change of the light emission relative to the excitation light.

33. (Original) The method of claim 32, wherein the fluorescence characteristic corresponds to the fluorescence lifetime.

34. (Original) The method of claim 23, wherein wavelength of the first excitation light is generally the same as wavelength of fluorescent light emitted by the agent in response to the second excitation light.